DETAILED ACTION

Status of Application

Claims 1-11 remain cancelled.

Claims 19-20 remain withdrawn from consideration.

Claims 12-20 have been amended.

Claims 12-18 are presented for examination.

Withdrawal of Claim Rejections

The rejection of claim 14 under 35 U.S.C. 112, second paragraph, as generally set forth in the Office Action dated 11/13/2009, is withdrawn in view of Applicants' amendments to the claims.

The rejection of claims 12-18 under 35 U.S.C. 103(a) as being unpatentable over Rickard (US Patent No. 4,076,515) in view of Jonninen (US Patent No. 6,010,551), as generally set forth in the Office Action dated 11/13/2009, is withdrawn in view of Applicants' amendments to the claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 15, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the ammonium nitrogen" in line 16 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the cycle" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "thermal vacuum treatment" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodruff (US Patent No. 6,464,875) in view of Rickard (US Patent No. 4,076,515).

In regard to claim 12, the Woodruff reference is drawn to a system for converting waste materials into useful bio-gas and fertilizer, and/or soil amendment product, illustrated in Figure 1 [See Abstract]. The method includes sending wastes to an anaerobic treatment unit/digestor (20). A conditioner for enhancing anaerobic digestion is not essential [See Column 4, lines 61-62]. The anaerobic treatment can be operated in the thermophilic temperature range (49-60°C) [See Column 5, lines 41-44]. Bio-gas is generated during anaerobic treatment. Bio-gas is made up of methane, carbon dioxide, and ammonia [See Column 5, lines 27-34]. The bio-gas produced during the anaerobic digestion stage can be collected and used for energy recovery, or stored for later use in a gas storage tank (5). Figure 2 further demonstrates the anaerobic treatment unit. Each tank is completely gas-sealed with a bio-gas vent (23) and a bio-gas recirculation line (25F) [See Column 15, lines 27-30]. Ammonia vapor can be fed to an ammonia scrubber column (72). The ammonia vapor is contacted with an absorbent agent and condensed into a liquid form which is collected [See Column 6, line 56 – Column 7, line 22].

The Woodruff reference fails to teach the claimed pressure ranges.

The Rickard reference discloses a method for extracting nitrogen fertilizer from organic waste water, for sanitizing the waste and reducing emissions by thermal treatment of the waste water at a pressure below atmospheric pressure (33 to 94 kPa)

and at temperatures ranging from 40 to 90°C [See Abstract; claim 1; Column 3, lines 31-36; Column 6, lines 35 and 36].

One of ordinary skill In the art, at the time of Applicants invention, would have been motivated to operate under low pressure conditions because the object of reducing the pressure within the reactor and elevating the temperature of the reaction product is to cause the ammonia gas in the solution to become insoluble [See Rickard, Column 6, lines 30-35]

In regard to claim 13, the Woodruff reference discloses, in Figure 2, a biogas recirculation pump (25F) fed back into the waste treatment reactor (22], thereby conducting the carbon dioxide containing biogas through the waste product to be treated

In regard to claim 14, differences in temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such a temperature is critical. Rickard shows in Figure 2, the emitted gas is cooled (see column 6, lines 2-5; column 7, line 64 to column 8, line 8) in condenser (62) and is then introduced into a separate reactor (74) and comes into contact with an aqueous absorption agent (see column 5, lines 2-7).

In regard to claim 15, biogases, with the composition disclosed in Table 3-4, produced in Woodruff's reference are fed to a storage tank (5). Woodruff is not explicit to the uses of the gaseous composition but notes byproducts from various sources can be blended to provide a more consistent feed to the anaerobic treatment unit [See Column 5, lines 7-9]. It would be within the level of one of ordinary skill in the art to provide additional carbon dioxide into a closed loop process like that taught by Woodruff as a way to reduce greenhouse gas emissions.

In regard to claim 16, the Woodruff reference teaches the use of waste from animal product and by-product processing plant [See Column 1, lines 9-12]. One of skill in the art would recognize a number of possible waste sources. Manures are common waste sources for fertilizer production processes. The waste mater can be introduced into an equalization tank (10) to pre-treat the product [See Column 4, lines 58-60].

In regard to claim 17, Rickard shows in Figure 1, the digested sludge (18) is dewatered further by a vacuum filter process (20). The supernatant and a portion of the filtered sludge are directed into the reactor (24) [See Column 4, lines 42-48]. The output liquids emerging from my process are essentially odor-free and have a relatively low nitrogen concentration. One of skill in the art would have been motivated to subject the waste material to this step because the output materials may be returned to the wastewater treatment operations without adverse effect on these processes [See Column 3, lines 54-60]. The sludge solids which remain after filtration may be disposed

of by incineration, land filling, composting or drying for sale as a soil conditioner [See Column 1, lines 43-45].

In regard to claim 18, the Woodruff reference teaches ion exchange as an alternative ammonium recovery process. This can be used to remove and recover the ammonia instead of the air/steam stripper (50) and scrubber column (70) in Figure 1. In this process, an ammonia ion specific resin is used to remove ammonia from a water stream (i.e., through adsorption) as it is passed through the ion exchange column. The ion exchange column is then back washed with a sulfuric acid solution to recover the ammonia from the resin. This solution is then further processed to produce either an ammonium sulfate fertilizer solution or a solids ammonium sulfate product (purified ammonium sulfate crystals). Either of these products can be used as a direct fertilizer product or as an ingredient in fertilizer materials [See Column 7, line 60 – Column 8, line 11].

Response to Arguments

Applicant's arguments, filed 02/08/2010, with respect to the rejection(s) of the claims under the Rickard and Jonninen references have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Applicants' amendments to the claims.

The new claim amendments add further limitations to the production method, now "without the addition of acids or alkali". Applicants similarly amended the specification to add support for the treatment process "without acids and alkalis". Applicants believe the limitation in claim 1 - "without acids or lyes" - was an error, stemming from an incorrect translation of the German priority document. The amendments properly overcome the rejection based on the Rickard and Jonninen references because the Rickard reference discloses the addition an alkaline reagent such as lime (CaO). The process is only possible due to the addition of lime

Conclusion

Claim 12-18 are rejected.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. SMITH whose telephone number is (571)270-3599. The examiner can normally be reached on Monday - Thursday, 9:30am to 6:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENGO/
Supervisory Patent Examiner, Art Unit 1793

Jennifer A. Smith
March 25, 2010
Art Unit 1793

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